

[print out](#)

Application serial number 200402872 (I246770)

Title Semiconductor memory device

Publication Date 2004/02/16 (2006/01/01)

Application Date 2003/03/05

Application No. 092104662

IPC H01L-027/10

Inventor IWATA, HIROSHIJP;
SHIBATA, AKIHIDEJP

Applicant SHARP KABUSHIKI KAISHAJP

Priority Number 2002/03/05 JP20020058142
2003/02/13 JP20030035280

Abstract

The present invention provides the technique related to a kind of semiconductor memory device that is composed of the following devices: a semiconductor substrate 11; the gate insulation film 12 formed on the semiconductor substrate 11; a single gate electrode 13 formed on the gate insulation film 12; two charge maintaining portions 61, 62 located on both sides of the gate electrode 13 sidewall; the source/drain regions 17, 18, which correspond to the charge maintaining portions 61 and 62, respectively; and the channel region, which is disposed under the single one gate electrode 13. Thus, the memory function of two charge maintaining portions 61, 62, and the transistor action function of gate insulation film 12 are separated so as to obtain adequate memory function and the capability of thinning gate insulation film 12 such that short channel effect can be easily controlled. In addition, because two charge maintaining portions 61, 62 formed on both sides of the gate electrode 13 are separated by the gate electrode 13, it is capable of effectively suppressing the interference phenomenon when rewriting. Furthermore, by appropriately setting the voltage of gate electrode 13, the voltage of one side of diffusion layer region 17, and the voltage of the other side of diffusion layer region 18, it is capable of selectively injecting holes or electrons into the charge maintaining portion 62 on one side of the diffusion layer region 18. Therefore, it is capable of providing a semiconductor memory device that can execute binary operation and can be easily miniaturized.

**Patent Right
Change**

Application number	092104662
Authorization note	No
Qualification right note	No
Transfer Note	No
Inheritance Note	No

Trust note	No
Objection note	No
Exposure Note	No
Invalidation date	
Withdrawal date	
Issue date of patent right	20060101
Due date of patent right	20230304
Due date of annual fee	20081231
Due year of annual fee	003